

In re Application of:
Nguyen, et al.

Group Art Unit: 2823

Examiner: Khiem D. Nguyen


For: Selective Etching of
Organosilicate Films Over
Silicon Oxide Etch Stop
Layers

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

CERTIFICATE OF MAILING
37 CFR 1.8

I hereby certify that this correspondence is being deposited on
11/30, 2005 with the United States Postal Service as
First Class Mail in an envelope addressed to: Mail Stop
Amendment, Commissioner for Patents, P.O. Box 1450,
Alexandria, VA 22313-1450.

11/30/05 Date  Signature

DECLARATION UNDER 35 C.F.R § 1.131

I, Li-Qun Xia, in support of conception and reduction to practice of claimed subject matter prior to filing of the present application on July 23, 2001, hereby declare:

1. I was a co-inventor with Huong Thanh Nguyen, Michael Scott Barnes, and Mehul Naik of the subject matter described and claimed in the present application filed on July 23, 2001 and am familiar with the disclosures and pending claims;

2. That we jointly conceived of the subject matter of all independent claims pending in this application prior to February 2, 2001, the filing date of *Gabriel et al.*;

3. That our conception of the claimed subject matter of the pending independent claims prior to February 2, 2001, is evidenced by Exhibit A, which is an invention alert disclosing the etching of organosilicate dielectric material with chemistry containing significant levels of hydrogen containing fluorocarbon gases;

4. That the invention alert shown in Exhibit A was prepared prior to February 2, 2001 and all dates masked as "DATE" in Exhibit A are prior to February 2, 2001;

5. That we diligently pursued the subject matter of the pending claims from a time beginning before February 2, 2001, until filing of the present application on July 23, 2001;


6. That we submitted the invention alert shown in Exhibit A to our in-house legal department on a date prior to February 2, 2001;

7. That our in-house legal department submitted the invention alert shown in Exhibit A to an outside legal firm for prosecution of the above identified application prior to February 2, 2001;

8. That subsequent reduction to practice of the invention occurred at latest on July 23, 2001 with the filing of the above identified application.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 11/13/2005


Li-Qun Xia

4. That the invention alert shown in Exhibit A was prepared prior to February 2, 2001 and all dates masked as "DATE" in Exhibit A are prior to February 2, 2001;

5. That we diligently pursued the subject matter of the pending claims from a time beginning before February 2, 2001, until filing of the present application on July 23, 2001;

6. That we submitted the invention alert shown in Exhibit A to our in-house legal department on a date prior to February 2, 2001;

7. That our in-house legal department submitted the invention alert shown in Exhibit A to an outside legal firm for prosecution of the above identified application prior to February 2, 2001;

8. That subsequent reduction to practice of the invention occurred at latest on July 23, 2001 with the filing of the above identified application.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: _____

Li-Qun Xia

INVENTION ALERT FORM

INVENTION ALERT FORM

DH / JW
DD/LOWK
2445

TO: Gaile Bailey
Extension:

M/S 2061
32724

MASK

ALERT NO: _____

Current Date:

Mask

0005619

CIRCLE ONLY ONE FROM EACH TOP SECTION:

1) OWNER 2) DIVISION 3) FINANCIAL COST CENTERS(PGB)

PLEASE SUBMIT ONE ORIGINAL, SIGNED DOCUMENT FOR RECORDING. IF THIS IS A COPY OF A PREVIOUSLY SUBMITTED ALERT, PLEASE MARK IT ACCORDINGLY

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|---------------|--------------|-------------------|------------------------|---------------------|---------------------------|-------------|
| TPI | PDD | ETCH | OTHER | EHANCE D CORE | MD | AKT |
| AIT 0723 | KPU1 0166 | METAL 0881 | IBSS 0676 | CORE 0793 | COPPER 2492 | OPAL |
| ORION 2471 | KPU3 0281 | SILICON 0916 | SMO GASFLOW 1659 | ATD 1301 | PLUG 2492 | ORBOT |
| CAP 2512 | KPU8 0195 | IPS *0521 | SMO PUMPS 1651 | GREEN 2590 | LINER/ BARRIER 2492 | APD 2613 |
| SWIFT 1755 | PSI 2442 | COM ENG 1419 | WMO/Austin 2081 | | ECD/CU 2492 | ICT |
| EPI 2470 | CMP 1399 | SMO 1659 | PRP 1654 | | COMMON 2492 | |
| TPO* 0584 | LOWK 2445 | CORE TECH 1245 | 300mm 2199 | | IMS 2492 | |
| | | | | | BASELINE 2492 | |

*TPO - RTP/HTF/OXDL

**IPS - MXP/RPS/HDP

Please use separate attachments for any answers that don't fit on the form, especially for questions 3-8. If the answer to a question is "NONE", please write "NONE" rather than leaving the answer blank.

1. Title of Invention (please print clearly):

Selective Etching of Organosilicate Films Over Oxide Stop Layers

2. Inventors-Names only-(please print clearly and provide complete information at Section 9.)

Huong Thanh Nguyen

Michael Scott Barnes

Li-Qun Xia

3. Earliest dates and model names of all Applied products incorporating the invention which have been offered for sale or are expected to be offered for sale:
4. If the invention has been demonstrated or described to persons other than Applied employees, for each disclosure please provide the earliest date, name of company, a brief description of what was disclosed and the purpose of the disclosure. Attach a copy of any related non-disclosure agreements:
5. If future disclosures like those in Question #4 are expected to occur within the next 12 months, please provide the anticipated date, type of information to be disclosed, and purpose of the disclosure: NONE []
6. Describe any other known designs or processes, whether actually implemented or merely proposed in a publication, which could be considered similar to your invention or which constitute the state-of-the-art improved upon by your invention: If described in a publication, attach a copy of same or provide a citation.

7. List each feature of the invention which you consider novel and non-obvious. Describe the advantages of each novel feature in comparison with the state-of-the-art approaches which are most similar to your invention:

- a) **The use of a TEOS or silane oxide dielectric stop layer for dual damascene structure with organosilicate film as the main dielectric**
- b) **Etching of organosilicate dielectric material with chemistry containing significant levels of hydrogen containing fluorocarbon gases (pure H₂ could be added to the chemistry as well)**

8. Describe the invention, preferably with reference to attached drawings:

- a) **Construct a dual damascene structure with an organosilicate dielectric for the main film and a TEOS or silane oxide as a stop layer(s).**
- b) **Etch the main dielectric film with chemistry containing significant levels of hydrogen containing fluorocarbon gases (pure H₂ could be added to the chemistry as well)**
- c) **Etch stop layer with reduced levels of hydrogen containing fluorocarbon gases**

ATTACH ADDITIONAL SHEETS TO DESCRIBE INVENTION AS NEEDED

9. Provide the following information for **EACH** inventor:

Inventor #1:
 Legal Name: Huong Thanh Nguyen - Employee # [REDACTED] Mail Stop [REDACTED]
 Work Phone [REDACTED] Fax No.: [REDACTED]
 Job Title: [REDACTED]
 Citizenship: [REDACTED]
 Home Address: [REDACTED]
 Manager: [REDACTED] Title: [REDACTED]
 Div. Manager [REDACTED] Title: [REDACTED]
 Product Group: [REDACTED] Dept #: [REDACTED]

Inventor #2:
 Legal Name: Michael Scott Barnes Employee # [REDACTED] Mail Stop [REDACTED]
 Work Phone [REDACTED] Fax No.: [REDACTED]
 Job Title: [REDACTED]
 Citizenship: [REDACTED]
 Home Address: [REDACTED]
 Manager: [REDACTED] Title: [REDACTED]
 Div. Manager [REDACTED] Title: [REDACTED]
 Product Group: [REDACTED] Dept #: [REDACTED]

Inventor #3:
 Legal Name: Li-Qun Xia Employee # [REDACTED] Mail Stop [REDACTED]
 Work Phone [REDACTED] Fax No.: [REDACTED]
 Job Title: [REDACTED]
 Citizenship: [REDACTED]
 Home Address: [REDACTED]
 Manager [REDACTED] Title: [REDACTED]
 Div. Manager [REDACTED] Title: [REDACTED]
 Product Group: [REDACTED] Dept #: [REDACTED]

FOR ADDITIONAL INVENTORS, PLEASE COMPLETE AND ATTACH ADDITIONAL SHEET AS NEEDED.

ADDITIONAL INVENTORS:

| | | | |
|---------------------|-------|------------------|-----------------|
| Inventor # : | | | |
| Legal Name: | _____ | Employee # _____ | Mail Stop _____ |
| Work Phone | _____ | Fax No.: _____ | |
| Job Title: | _____ | | |
| Citizenship | _____ | | |
| Home Address | _____ | | |
| Manager: | _____ | Title: _____ | |
| Div. Manager | _____ | Title: _____ | |
| Product Group: | _____ | Dept #: _____ | |

| | | | |
|---------------------|-------|------------------|-----------------|
| Inventor # : | | | |
| Legal Name: | _____ | Employee # _____ | Mail Stop _____ |
| Work Phone | _____ | Fax No.: _____ | |
| Job Title: | _____ | | |
| Citizenship: | _____ | | |
| Home Address | _____ | | |
| Manager: | _____ | Title: _____ | |
| Div. Manager | _____ | Title: _____ | |
| Product Group: | _____ | Dept #: _____ | |

| | | | |
|-----------------|-------|------------------|-----------------|
| Inventor | | | |
| Legal Name: | _____ | Employee # _____ | Mail Stop _____ |
| Work Phone | _____ | Fax No: _____ | |
| Job Title: | _____ | | |
| Citizenship: | _____ | | |
| Home Address: | _____ | | |
| Manager | _____ | Title: _____ | |
| Div. Manager | _____ | Title: _____ | |
| Product Group: | _____ | Dept #: _____ | |

10. Signature, date and **PRINTED** name of each inventor plus two witnesses who have read and understood this Invention Alert form:

Inventors:

Huong T. Nguyen
Printed Name

[REDACTED]
Date

[Signature]
Signature

Michael Barnes
Printed Name

[REDACTED]
Date

[Signature]
Signature

Li-Run Xia
Printed Name

[REDACTED]
Date

[Signature]
Signature

Printed Name

Date

Signature

Printed Name

Date

Signature

Printed Name

Date

Signature

Witness:

Printed Name

Date

Signature

Printed Name

Date

Signature

Return to: Gaile Bailey
Mail Stop: 2061
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